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LOW-COST CREATIVITY

BY CHRISTIAN COOPER

The price of many systems is making computer graphics and effects accessible to artists and independent videomakers

The AIVF Screening Room at Hunter College in New York was packed with an expectant crowd of independent producers, graphic artists, animators, and interested students, all drawn there by the chance to learn how computers could help their craft. As the lights dimmed, Duane Palyka of the New York Institute of Technology's Computer Graphics Lab introduced a 1985 3D computer animation by Dick Lundin: a shining robot ant marches across the landscape, its insect driver works the control levers in the cockpit, and another robot whizzes to a construction site of steel girders, all to the audible amazement of the audience. And in everyone's mind, behind the ooohs and ahhs, lurked two questions: can I do work like this, and can I afford it?

For the independent videomaker, assuming talent, the answer is yes, and no. The technology exists commercially, but the equipment costs and time required are prohibitive for results that sophisticated—Lundin's piece took one full man-year of work on CGL's 3DV graphics system (list price: about \$1.5 million) for a minute and 30 seconds of finished animation. But while high-end systems may be out of the independent's reach, computer graphics and digital effects of a quality that can enhance a video project are available at an affordable cost.

Low-cost computer graphics can offer speed and flexibility. A computer graphics artist can use a paint system to create a scene in a matter of minutes, and then alter it as necessary. Changing a background color is a simple matter for the computer, but would mean starting from scratch using conventional methods. Simple animations can be similarly quick when performed electronically. And just as conventional graphics have a distinctive look, so too does computer imagery. The computer look is much in demand right now and lends a sense of modern technology to graphics and animations.

Christian Cooper is managing editor of VIDEOPHOTOGRAPHY.

These factors are making computer effects increasingly popular with independents. According to Charlayne Haynes, program director for the Association of Independent Video and Filmmakers (AIVF) and organizer of the computer fair where Dick Lundin's piece was screened, the number of independent works putting electronic video effects to use are growing, with the greatest use coming from avant-garde producers and the most frequent application being titling. Haynes feels, however, that the full potential of computer graphics has yet to be widely exploited by in-

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dependent producers. She cites a communications and distribution gap between the manufacturers of the computer systems and the independent videomakers as the root of the problem. The trade show and retail structure of the computer industry largely bypasses the independent video professionals, who would be interested in the systems if they only knew what the systems could do for them as videographers. "If they go into a store where the Amiga is being sold, nine times out of ten the people there cannot effectively communicate what they could use the Amiga for," Haynes says.

So Haynes organized the computer fair, "Video with a View: a Computer Market for Independents," partly with the goal of closing the distribution gap. Along with a panel discussion on computers and video featuring Duane Palyka and Carol Chiani, chairperson of the computer graphics association NYC ACM/SIGGRAPH, the fair exposed independent video producers to six low-cost computer systems with potential video applications. More important, demonstrating those systems

were representatives familiar with the computers and their video uses. Of those six systems, four—the Amiga, Mindset, Fairlight and Inovion—are profiled here based for the most part on user comments.

One should keep in mind that these are low-cost systems, all with list prices below \$10,000. So forget Dick Lundin's piece. Forget Mick Jagger's "Hard Woman" video. You won't be making either one. The first step towards a realistic appraisal of a low-cost system is recognizing its limitations. None of these systems will give you ray tracing (simulating glass surfaces by tracing the light reflected from an object) because if they did, they wouldn't cost less than \$10,000. Relatively low resolution and limited colors are a given. Yet they can still serve as powerful video tools.

THE COMMODORE AMIGA 1000. The Amiga from Commodore Business Machines, of Westchester, Pennsylvania, has a great deal of potential and at \$1,295 is the lowest in price of the featured units. This PC, while not designed specifically for the video industry, is generating a lot of excitement among video professionals. "What the IBM did to business, the Amiga is doing to video," says the president of New York's Block/Burns Productions, Bernie Block, who uses the system in his producing of low-budget industrial and educational tapes. The excitement is over its 4,096 colors—an unprecedented range for such an inexpensive unit. Software options allow, from those 4,096 colors, a 32-color palette with 320 x 200 pixel resolution; a 16-color palette with 640 x 200 pixel resolution; or a 16-color palette with 640 x 400 pixel interlaced.

Besides the color, other capabilities of the system are also promising. Software options currently available include Aegis Animator and Aegis Paint. A 3D animator from Electronic Arts and a real-time digitizer have recently become available—after a long period of waiting and uncertainty. One of the drawbacks of the system, until recently, was that much of the video-related software and many hardware peripherals existed only as "vaporware"—the computerese term for promised



The Commodore Amiga.

but elusive hardware and software. With the release of the digitizer and Electronic Arts software, that problem has been corrected.

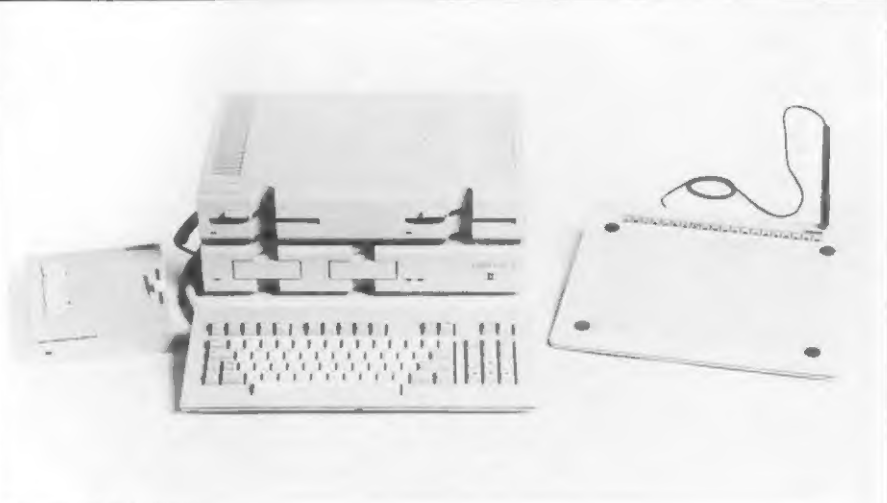
As for what the system can't do, it can't make images that look real. While 4,096 colors are a lot for a 1,300-dollar system, it takes a good 5 million colors to be able to match a live image. Also, the memory of the unit is somewhat limited: 256K of RAM is standard, user-expandable to 512K internally and externally expandable to eight megabytes of continuous RAM. And Bernie Block points out that the system cannot, as some people seem to expect, function as a DVE.

"Whoever buys it has to be aware that they're buying it to create samples of what animation could look like, simple low-budget things, and demos of how a piece of equipment would look and operate," says Block. Specifically, he makes the most use of the Amiga in titling, using it in place of a Chyron and at a fraction of that unit's cost. And, working with the Amiga's non-real-time digitizer, Block uses the system for colorization.

Finally, besides creating and altering video imagery, the Amiga further enhances a video business by serving as a standard PC. With available software it can provide bookkeeping, budgeting and scriptwriting functions that streamline the off-screen processes of making video. Thus it can save time and money secretarially, adding enormously to the cost-effectiveness of the device. This advantage was one of the determining factors prompting Block to settle on the Amiga.

Among Block's works involving the Amiga is a slide show for a nonprofit organization in New York. He transferred the slide show to videotape, using the Amiga to add some titling and graphics.

THE M-1000 MINDSET I AND M-2000 MINDSET II. Like the Amiga, the Mindset I ("the Titler") and II (titling, graphics, and animation system) are microcomputers that principally generate graphics. Unlike the



The Mindset M-2000.

Amiga, the Mindset is backed by a marketing agreement with video equipment giant JVC and is targeted specifically at the video marketplace. Though the color range and speed of the Amiga outstrip those of the Mindset, the commitment of JVC and Sunnyvale California-based Mindset Corporation to a computer designed with video interface as its sole purpose assures that software and hardware peripherals will be readily available to expand the unit's capabilities.

The Mindset I, which is the more basic model, includes a base unit with 160K RAM, a keyboard, a video production module, and software. The Mindset II adds 352K RAM to the base unit, an expansion unit with dual disk drives, a graphics tablet, an RS-232C module, and new software. Resolution of the elementary level system is 302 x 200 pixels with a 16-color palette and can be upgraded to as much as 640 x 200 pixels from a 512-color palette. The Mindset I can be upgraded to a Mindset II by adding the Mindset II's extra hardware and software.

One of the strengths of the Mindset is that it utilizes Lumena software from Time Arts, the same software found in the more high-end Time Arts professional system. This sometimes leads users to expect 3D rendering, which can't easily be done on the Mindset because the Lumena software is a 2D paint system. Bob Kane, manager of Computer Cottage in Mattituck, New York which distributes the Mindset, explains that "a lot of people, seeing the power and the ease that Lumena provides them with the Mindset in creating imagery, are lulled into thinking, 'Well, maybe this should be three-dimensional as well.' But it's not there."

Another strength of the system is that it provides multiple object animation in real time. Combined with its paint capabilities, this means the Mindset offers a variety of animation possibilities at a reasonable cost. Still, the primary application of the device to date

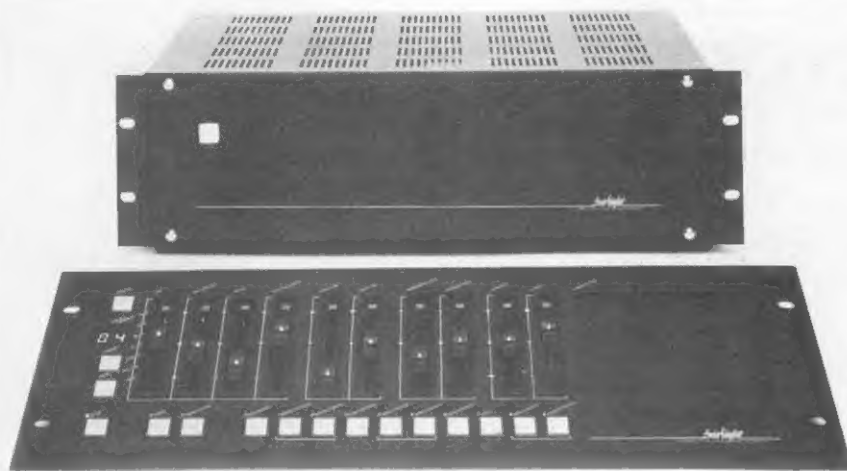
has been for titling, as with the Amiga; animation comes in second. "A lot of small, independent producers don't want to go out and spend five, six, seven thousand dollars on a box that's only going to create characters for them," says Kane, "so people look at the Mindset as an alternative to a character generator."

As a standard microcomputer, the Mindset can perform word processing, bookkeeping, and accounting programs; provide spreadsheets and storyboards; and aid in script analysis. Like the Amiga, the system is IBM-compatible, so there's a whole range of software available for the system.

Some recent independent work on the Mindset includes titling of videotapes for special occasions like weddings. The list price of the Mindset I is \$2,325; of the Mindset II, \$5,865.

THE FAIRLIGHT CVI. Perhaps the most unusual of the low-cost systems comes from Fairlight Instruments, of Los Angeles, manufacturers of the Computer Musical Instrument (CMI). Using similar software, Fairlight created the CVI—Computer Video Instrument—a cross between a digital video effects unit and a paint system, with a control panel reminiscent of an audio mixing board. Priced at \$7,945 for the CPU, sync board, and control panel, the Fairlight offers a somewhat limited resolution of 256 x 256 pixels. The system compensates with 4,096 colors and a "de-jag" function that softens edges, so that the apparent resolution, according to the unit's promoters, is comparable to that of 1/4-inch videotape.

There are other limitations to the system, besides resolution. Designed as a video effects device, it can't do any true animation—though it does offer color cycling. As a DVE, the Fairlight lacks rotation and perspective capabilities, and though it can compress a frozen image, it can't yet do the same to a moving one. "I wish it was more capable in terms of its



The Fairlight CVI.

digital effects capabilities, but the fact that it's only a tenth of the cost of the other DVEs on the market is basically the reason that it doesn't do all that," explains Abner Dumoff, who has used the Fairlight for over a year. Previously an animator for Dolphin Productions, he now works on music videos and other low-budget 1/4-inch productions, and acts as a representative for Fairlight.

What the Fairlight does do is a host of real-time video effects: background generation; panning, zooming and stretching via its chromakey facilities; and mirror imaging horizontally or vertically, to name a few. Dumoff describes it as a video effects studio in a box, functioning to a greater or lesser extent as a chromakey, character generator, and switcher, as well as a paint system/DVE.

A unique aspect of this unit among video effects devices is the way one operates it. Like an audio mixing board, the control panel features sliders and presets; the presets provide a quick access alternative to the menus, as Dumoff explains. "A preset is essentially a snapshot of all the settings in the machine: all the menus and all the front panel controls. So you can program in the settings as a two-digit number. Then you just hit the preset button and the two-digit number, and you are at that setting, which means that you've called up a specific color, specific brush shape, specific paint style, various wipes, etc."

But the Fairlight's most interesting facet is its applications for live video. Unlike other systems, the Fairlight not only can modify an image in real time, but can also take a live video input signal and add effects as a live performance is being recorded. The result is that the effects process is moved from postproduction to the production stage, saving time and money. This is especially significant for the production of low-budget music videos; a band could have the footage for its video, complete with effects, in the time it took to perform a few takes of the song, thus avoiding hours of

costly postproduction time adding effects in an editing suite. The implications go further, opening up new possibilities for video as a visual accompaniment to live music performances at clubs and discos—in effect, instant, improvised music videos.

As an example of what the Fairlight can do, Dumoff cites *Rodney's Room*, a half-hour TV pilot he describes as "a 1990s *Mr. Rogers' Neighborhood* for adults." Among the effects in the show is Mr. Monitor, a large shrine with a TV monitor for a face. The images that flash across that face were processed on the Fairlight; as was a teleportation effect, using a live image, frame-stored image, and a disintegrate stencil wipe.

THE INOVION PGS. As the Amiga and Mindset are frequently used as substitutes for a Chyron character generator, so the Inovion Personal Graphics System (PGS) is making a place for itself as the low-cost alternative to the Quantel Paintbox. With a resolution of 512 x 483 NTSC standard, a 2.1-million-color palette and 768K bytes memory, it's the most advanced system included here. At \$9,995, it is also the most expensive, though still a fraction of the cost of a Paintbox.

As with the Fairlight, the Inovion was not designed for animation; it doesn't even color-cycle. But as a paint system, its color palette allows it to create images far more realistic than a 4,000-color system could make. The forte of the Inovion, according to Skip Bullough of Layton, Utah-based Inovion Corporation's customer service department, is digitizing and altering frames with the system's extensive paint capabilities.

Steve Howard has been using the Inovion for a year-and-a-half of his 20 years in video production. The producer/director and vice president of Beardsley-Howard, Inc., of College Park, Maryland, a TV production and graphic design firm, Howard finds the Inovion to be especially useful for generating backgrounds. "We might generate a grooved back-



The Inovion PGS.

ground; then over that, during the course of the program, we will super pictures of the states from which telephone calls are coming." Another application is the creation of charts and graphs, which Howard claims can look "spectacular" compared to the output of 16-color PCs.

Howard has used the Inovion to create a series of graphics for training tapes for the Department of Transportation of the State of Washington. The graphics consisted of several modified or manipulated still frames of pieces of equipment that were being demonstrated. Another recent Inovion project he completed was for a trade union, creating four five-minute informational tapes explaining union community issues. The tapes were composed almost entirely of Inovion graphics.

Other low-cost systems featured at the AIVF computer fair were the VideoShow from General Parametrics Corporation, of Berkeley, California; and the MacIntosh from Apple Computer, Inc., of Cupertino, California. The MacIntosh was generating a lot of excitement because of its Musical Instrument Digital Interface (MIDI) software. (For more information on this system, see the extensive article, "A MacIntosh Primer" by David W. Leitner in *The Independent*, June/July 1986.)

In fact, if the response to the AIVF computer fair is any indication, there's a growing excitement among independents about low-cost computer systems in general. So if the gap between manufacturers and independents closes, we can expect to see a "democratization" of computer graphics, with more videomakers using these and other affordable systems. As Steve Howard points out, it's a situation reminiscent of the way portapaks made television production accessible to video guerillas in the late '60s and early '70s. "This is that same revolution," he says. "This is video tools in the hands of people. And to me, that's just about the most exciting thing about this business." □

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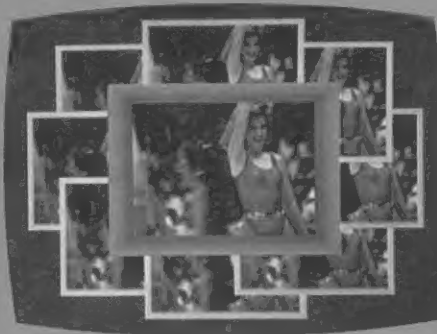
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